Electronic Version
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SWITCHING-TYPE POWER CONVERTER

Abstract

An apparatus for increasing efficiency and reducing heat dissipation in power converters is disclosed. Zero-voltage-switching (ZVS) can reduce switching loss of power converters but it often results in a very complicated design and only works well under constant output current. In order to allow the ZVS to work over a wide loading range, the transformer secondary current is blocked when the primary starts to resonate. Hence, the resonant voltage waveform across the switch will not change even when the loading current is changing. Such a resonant voltage waveform is obtained with the aid of the transformer primary inductance and capacitor(s). Also provided is a novel driving circuit which controls the switching. Alternatives and variations of this apparatus can be made to satisfy different applications such as power conversion and power inversion. The subject power converter significantly lowers the heat loss and achieves higher efficiency for very wide loading ranges.